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A New Pliocene Capybara (Rodentia, Caviidae) from Northern South America (Guajira, Colombia), and its Implications for the Great American Biotic Interchange

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Abstract: One of the most striking components of the modern assemblage of South American mammals is the semiaquatic capybara (Caviidae, Hydrochoerinae), the biggest rodent in the world. The large hydrochoerines are recorded from the middle Miocene to the present, mainly in high latitudes of South America. Although less known, they are also recorded in low latitudes of South America, and in Central and North America. We report the first record of capybaras from the late Pliocene of Colombia, found in deposits of the Ware Formation, Guajira Peninsula in northeastern Colombia. We analyze the phylogenetic position within Caviidae, the possible environmental changes in the Guajira Peninsula, and the implications of this finding for the understanding of the Great American Biotic Interchange. The morphological and phylogenetic analyses indicate that the hydrochoerine of the Guajira Peninsula is a new species, *Hydrochoeropsis wayuu*, and this genus is most closely related to *Phugatherium*. According to the latest phylogenetic results, this clade is the sister group of the lineage of the recent capybaras (*Nechoerus* and *Hydrochoerus*). *Hydrochoeropsis wayuu* is the northernmost South American Pliocene hydrochoerine record and the nearest to the Panamanian bridge. The presence of this hydrochoerine, together with the fluvio-deltaic environment of the Ware Formation, suggests that during the late Pliocene, the environment that dominated the Guajira Peninsula was more humid and with permanent water bodies, in contrast with its modern desert habitats.

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3D model related to the publication: Marine Early Triassic Actinopterygii from Elko County (Nevada, USA): implications for the Smithian equatorial vertebrate eclipse

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Abstract

The presented dataset contains the 3D surface scan of the holotype of *Birgeria americana*, a partial skull described and depicted in: Romano, C., Jenks, J.F., Jattiot, R., Scheyer, T.M., Bylund, K.G. & Bucher, H. 2017. Marine Early Triassic Actinopterygii from Elko County (Nevada, USA): implications for the Smithian equatorial vertebrate eclipse. Journal of Paleontology. <https://doi.org/10.1017/jpa.2017.36>

Keywords: Actinopterygii, Early Triassic, Nevada, Osteichthyes, Smithian

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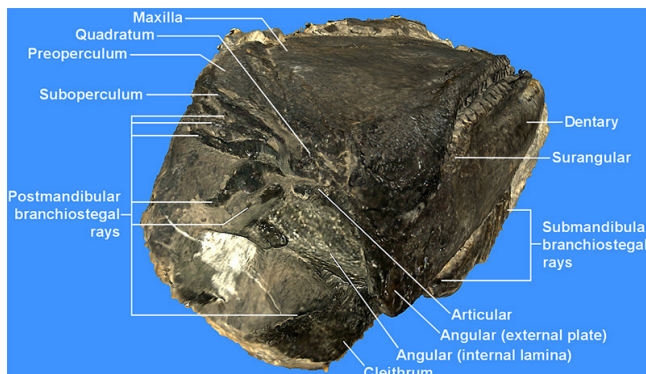


Figure 1. Holotype of *Birgeria americana* Romano et al., 2017 (NMMNH P-66225) from the Smithian (Olenekian, Early Triassic) of Winecup Ranch (Elko County, Nevada, USA) in oblique posteroventral aspect

Model IDs	Taxon	Description
M3#175_NMM	<i>Birgeria</i>	Articulated
NHP-66225	<i>americana</i>	partial skull in right view.

Table 1. Associated model of NMMNH P-66225

other species by the presence of additional elements in the operculogular series, such as an antoperculum and six branchiostegal rays in the postmandibular series, including a rudimentary branchiostegal ray in the posteroventral part of the operculogular series. The species from Elko County is further characterized by the presence of three discrete rows of teeth on the maxilla and dentary, whereas most other species have only two rows of teeth. The 3D surface model (Table 1) shows the arrangement and morphology of these diagnostic features.

INTRODUCTION

Here we present a 3D surface model of the holotype of *Birgeria americana*, an articulated partial skull, which was described by Romano et al. (2017). The fossil (NMMNH P-66225; Fig.1) is preserved in a limestone concretion, and curated in the New Mexico Museum of Natural History & Science, Albuquerque, USA. The nodule was found as float lying on strata of the Thaynes Group at a site located ca. 2.75 km south-southeast of the Winecup Ranch in east-central Elko County (northeastern Nevada, USA). Based on co-occurring ammonoids, the age of P-66225 is constrained to late early Smithian to early late Smithian (Olenekian, Early Triassic). *Birgeria americana* Romano et al., 2017 is distinguished from

METHODS

The 3D surface scan of NMMNH P-66225 (holotype of *Birgeria americana* Romano et al., 2017) was obtained using the ARTEC Spider 3D-surface scanner in combination with Artec Studio 9 software. The right side of the fossil was scanned manually in several steps and the overlapping individual scans were later stitched together to form a single mesh (including fine serial and global registration, automatic outliers removal and sharp fusion options). Then, the mesh simplification procedure of Artec Studio was applied to reduce file size. Finally, the color texture was mapped onto the mesh. The 3D surface model is provided in .ply and .obj format, and can therefore be opened with a wide range of freeware.

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Romano, C., Jenks, J.F., Jattiot, R., Scheyer, T.M., Bylund, K.G. & Bucher, H. 2017. Marine Early Triassic Actinopterygii from Elko County (Nevada, USA): implications for the Smithian equatorial vertebrate eclipse. *Journal of Paleontology*. <https://doi.org/10.1017/jpa.2017.36>